R&D Scoping and Framing Workshop
R&D Roadmap: Managing Western Water as Climate Changes
February 20 and 21, 2008

Responsibilities, Challenges, and Needs
Perspectives of Reclamation Water Operations Managers

Note: The information presented herein is intended solely to facilitate a working level dialogue between the federal scientific community, and Reclamation water and environmental resource managers, on climate change research needs in support of Western water management. As such, "*this information has not been formally disseminated by the Bureau of Reclamation and should not be construed to represent any agency determination or policy".*[1]

Generally describe your region's water operations and planning responsibilities *(this is meant to be a high level summary of your world):*

Great Plains is responsibilities for water operations ranging from preparing general broad reservoir operating criteria and guidelines to preparing annual and monthly reservoir operating plans. These plans can be implemented by our contractors who in turn make daily operating decisions and to the other end of the spectrum where Reclamation staff makes daily and hourly operating decisions, including implementation of those decisions.

For all reservoirs, whether flood control is authorized or not, Reclamation staff is involved in operating decisions during flood control operations with the COE.

Planning program is currently **reactive**:

- Conduct appraisal and feasibility studies to solve constituents' problems by developing Federal infrastructure projects
- Conduct special studies to aid constituents in solving problems w/o a Federally-developed project.

Planning program could be **proactive**:

- Examine existing Reclamation projects (single projects and systems) and determine when operational changes, changes in authorized purposes, project decommissioning/title transfer, or new project investments would yield economic or environmental improvements.
- Conduct basin-wide studies to improve the performance of both Federal and non-Federal infrastructure as part of the Secretary's "Water for America Initiative" (FY09).
- Develop risk/reliability profiles for existing projects and systems to account for warming-induced precipitation changes, growth (ag/biofuels, M&I, etc.).

Describe the primary types of decisions that your region makes associated with water and operations and planning that might be affected by climate change.

The Region makes decisions regarding the amounts of water to release from reservoirs to meet reservoir target levels and also makes decisions about available water supplies to contractors that might be affected by climate change.

For planning purposes GP evaluates the following:

1/ Stated in accordance with Information Quality Act (Public Law 106-554), Final Information Quality Bulletin for Peer Review (Office of Management and Budget, December 16, 2004).

- Is there a Federal interest in a solution, and if so, might an investment in Federal infrastructure be economic?
- How reliable, resilient or adaptable are potential solutions?
- What are the probabilities for alternatives to fail?
- What are the risk-benefit tradeoffs?

What are the primary scientific or non-scientific factors that typically govern these decisions?

- The amount of mountain snowpack is used to develop seasonal runoff forecasts that drive reservoir operating plans.
- Current forecasts of agricultural water demand are now uncertain at best and could be more unpredictable with climate change.
- Region relies heavy on NWS forecast of peak streamflows during flood control operations. A change in snowmelt rates and timing, and change in rainfall rates are a concern.
- Decision-maker's knowledge of risk, uncertainty and risk-benefit methods.
- Concise and understandable information

Who are the primary stakeholders affected by these decisions and summarize their primary concerns?

- Contractors with agricultural producers: reduced water allocations, more variable allocations from year to year.
- Contractors with municipal contract: reduced (firm) yield from reservoirs.
- Increase agricultural and municipal demands from present.
- Recreationists: restricted recreation opportunities, lower lake levels, loss of or reduce lake access, lower river levels and fewer game fish.
- Merchants: loss of recreation/tourist base business.
- Local/state constituents who have identified a problem and are looking for Federal (Reclamation) assistance in solving those problems.
- Their concerns include cost, cost-effectiveness, and risk management, i.e., water supply reliability, adaptability and resilience of alternatives to meet needs under uncertainty.

In general, list the top three wishes that you would like for scientific community to provide you, in support of your western water management responsibilities that are related to understanding and utilizing climate change information.

1. A method that could be applied by reservoir operating personnel so they could bracket better the variability in the water supply forecast (risk and uncertainty).
2. Improved predication of precipitation and runoff for next three months.
3. Demand forecasting (short term)
4. Appraisal level runoff/streamflow statistics, compared to historic, for a few likely climate scenarios at the 'small- to-medium' watershed scale, i.e., Bighorn River from Yellowtail Dam to headwaters; Yellowstone River from Billings to headwaters; Arkansas River

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from Pueblo Dam, Colorado, to headwaters; Republican River from headwaters in Colorado and Nebraska downstream to Harlan County Dam.

Are there current or emerging *"project-specific applications"* in your region where answers to these three wishes may be beneficial to you in the near-term?

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